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XXXI.—*Natural-History Notes from H.M. Indian Marine Survey Steamer 'Investigator,' Commander Alfred Carpenter, R.N., D.S.O., commanding.*—No. 9. *On a new Type of Astorhizidæ from the Bay of Bengal.* By HENRY B. BRADY, LL.D., F.R.S.

A FEW days ago, whilst on a short visit to this city (Calcutta), my good friend Mr. J. Wood-Mason, the Director of the Indian Museum, brought under my notice a number of Rhizopods of a type hitherto undescribed which he had recently dredged up (on board the 'Investigator') in the Bay of Bengal; and he has asked me to furnish a brief preliminary account of them for communication to the Microscopical Society of Calcutta* and for subsequent insertion in the 'Annals.'

The organisms referred to were obtained from two different localities, and present the characters of two distinct though closely allied species. The test in both forms consists of a thin arenaceous disk, but in the one case the disk is complanate, in the other more or less patelloid or tent-like; the

* Before which it was read on Feb. 14th, 1889: communicated by the President of the Society.

diameters, roughly speaking, about a quarter of an inch and half an inch respectively. The texture is loosely arenaceous, and the specimens are in consequence exceedingly fragile.

The general structural features can almost be read by the naked eye and are easily made out under a low magnifying-power. The test consists typically of a central chamber with a number of radiating tubes, either simple or branched, proceeding from it and extending to the periphery, the sandy investment forming a thin flat layer in the interstitial spaces. Mounted in Canada balsam and viewed by transmitted light the tubuli are seen to differ considerably in diameter in the two species, the larger form having the smaller tubuli. The central cavity is probably labyrinthic, for it often presents an irregularly reticulated appearance, as though more or less subdivided by aggregated sand-grains; but the inner surface of the tubuli is always smooth and appears to have a uniform chitinous lining. Externally the central chamber is usually marked by a small convex elevation and the tubes by limbate lines, generally more conspicuous on one side of the test than on the other.

Morphologically the new forms may be regarded as branched or radiate *Astrorhizæ* with the sandy investment continued between the arms, so as to produce an even, rounded, peripheral outline. Several specimens of the smaller species have no central chamber, and consist only of a branched tube traversing a thin lamina of agglutinated sand. This condition may be the result of fracture and subsequent growth, or such specimens may correspond to the "stag's-horn" variety of *Astrorhiza arenaria* ('Challenger' Foraminifera, pl. xix. figs. 7, 8).

Unfortunately only a few specimens were preserved out of the large number originally obtained, and owing to their extreme fragility still fewer are now left for examination. It is always difficult, even with sufficient material, to investigate the nature of the protoplasm of an arenaceous organism of this sort, and at present nothing can be said as to the presence or absence of a nucleus. The central chamber and tubuli appear to be nearly filled with slightly coloured protoplasmic matter.

As already observed, both species were abundant in the localities at which they were found, and there is little doubt they will soon be met with again; meanwhile the following descriptions will serve for their identification. Appended also are particulars as to their respective habitats. For obvious reasons I propose to associate Mr. Wood-Mason's name with the genus.

Family *Astrorhizidæ*.

Subfamily *ASTRORHIZINÆ*.

MASONELLA, nov. gen.

Test free, thin, outspread, discoidal or patelloid; consisting typically of a central chamber with radiating tubes, simple or branched, open at the periphery; the interstitial spaces occupied by plates of agglutinated sand-grains; texture arenaceous, with but little inorganic cement.

Fig. 1.

Fig. 2.

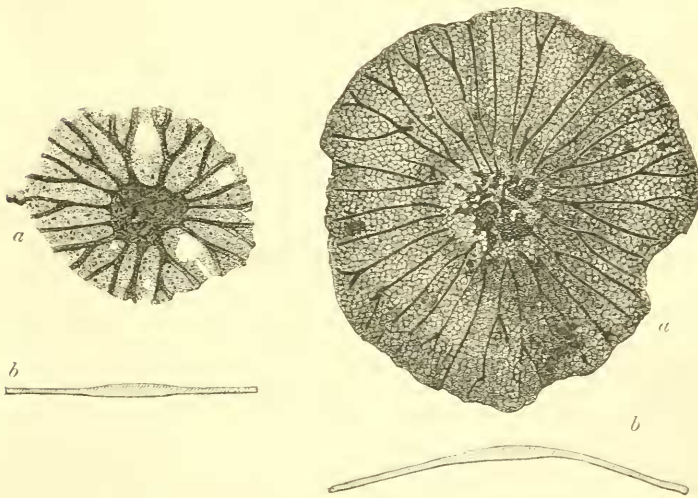


Fig. 1.—*Masonella planulata*, n. sp. Fig. 2.—*Masonella patelliformis*, n. sp. Magnified 5 diameters.

Masonella planulata, n. sp. (Fig. 1.)

Test thin, complanate, rounded or oval in outline; presenting (typically) a small central convexity about one third the diameter of the disk, nearly equally developed on the two lateral faces. Radial tubes numerous, from 0.1 to 0.2 millim. in diameter; either simple or dividing into two or three branches; limbate externally; the open peripheral extremities serving as the general aperture. Texture loosely

arenaceous; built up of light-coloured siliceous sand and sponge-spicules, the latter often in large proportion, together with a few Foraminifera and other minute organisms. Diameter of the figured specimen about 6 millim.; but fragments of much larger examples have been met with.

“Dredged 12th to 13th April, 1888; depth 250 fathoms; North Sentinel Island, Andamans, bearing N. 15° W. 18 miles; bottom green mud and sand. Multitudes of specimens came up on the tangle-bar, with a capital haul of *Umbrellula*, siliceous sponges, and Crustacea of deep-water types.”

Masonella patelliformis, n. sp. (Fig. 2.)

Test free, thin; patelloid or subconical; central chamber about one fourth the entire diameter of the test, but irregular in form and outline; radial tubes from 0·05 to 0·1 millim. in diameter. Colour dark; texture loosely arenaceous, exterior rough; the central chamber and tubuli more strongly marked externally on the convex than on the concave face. Diameter of the figured specimen 10 millim., but fragments indicate that this is by no means the maximum size.

“Dredged 11th April, 1888; depth 265 fathoms; about 7 miles S.E. by E. of Ross Island, Andamans; bottom green mud. The specimens came up in great numbers on the swabs which were attached to the trawl.”

Masonella patelliformis has a larger, coarser, and darker-coloured test than *M. planulata*, and its radial tubes are much thinner; its contour also is subconical, whilst that of the latter species is complanate.

The accompanying drawings (woodcuts, figs. 1, 2), made by a native artist, give a tolerably accurate idea of the two organisms. Fig. 1 *a*, represents the lateral aspect of *M. planulata*, 1 *b*, a diagram of its transverse section; fig. 2 *a*, *M. patelliformis*, 2 *b*, diagram of transverse section; all magnified 5 diameters.

Calcutta,
4th January, 1889.